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sini and those of Sir William Herschel, the breadth of the inner ring had increased in a more rapid ratio than that of the outer ring. The subsequent measures seem to indicate a reversal of this process.

The view of *Saturn*, given in the present Number, has been carefully drawn to scale and engraved by Mr. Warren De la Rue. The *principal* dimensions are taken from the *Nautical Almanac*, so far as they extended. Mr. De la Rue suggests that the data should include the major and minor semi-axes of the ball of the planet; the semi-axis minor of the dark ring; and the semi-axes of the divisions, according to the best authorities. His opinion is, that the large and fine telescopes which are now in use would enable a careful observer with a practised eye to fill up, and even to correct, the representation of micrometrical measures, and that, if the data for delineating *Jupiter* were given, his figure might probably be corrected by comparing the representation with the planet itself, seen under the most favourable circumstances.

Mr. De la Rue proposes to unite in one sketch the phenomena of *Saturn*, which have been seen by MM. Dawes, Lassell, and himself.

Professor Chevallier finds from a comparison between his ephemeris of *Hygeia* and observation that the errors alter very slowly; they are as follows:—

	Computed—Observed.		
	R.A.	N.P.D.	
1852.		°	
Oct. 24	−30·54	+27·6	
Nov. 2	30·87	31·5	Cambridge Meridian
30	32·08	48·1	
Dec. 2	−31·96	+50·9	

He has, therefore, thought it better, "instead of attempting to correct the elements from partial observations, to compute accurately the planet's places from the same elements, during the entire period of its present appearance."

The ephemeris has been printed by the Professor, who has had the kindness to send copies for distribution to the Royal Astronomical Society.

BIELA'S COMET. *Ast. Nach.* No. 836, p. 327.

The following and southern portion of Biela's comet was observed at Cambridge on Sept. 8, 16, 21, 1852. Professor Challis finds that the Roman observations of August 25, 27, 28, and Sept. 1, as well as all the Cambridge observations, belong to the *southern* and *following* portion. The observation of Professor Secchi on Sept. 15, and the Berlin observations of Sept. 17, belong

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to the *preceding* and *northern* part. Professor Challis further remarks, that the observations at Rome on Sept. 19 and 20, and at Berlin Sept. 22, confirm the above conclusions. Professor Secchi says, that the following head is the brighter of the two, and this probably corresponds to the larger head in the apparition of 1846.

The publication of *Cometic Orbits, with copious Notes and Addenda, compiled and edited by* Edward J. Cooper, 8vo. pp. 196, Dublin, 1852, was announced, but, unluckily, a copy for reference was not in the room. This work has already been alluded to by Mr. Graham.*

It is well known to the cultivators of cometic astronomy, that Dr. Galle appended a corrected list of all the computed cometary orbits which had been observed before June 1847, to Professor Encke's edition of Olbers' celebrated *Abhandlung*. But this work, notwithstanding its great accuracy and research, is in a considerable degree inaccessible to many English astronomers on account of its language; and the brevity of the notes implies a readier access to a large library than is usually the case. Mr. Cooper and his coadjutor, Mr. Graham, speak in the highest terms of Dr. Galle's labours, and have availed themselves of his researches: when they had not the means of consulting the reference, they have relied upon his authority in preference to any other.

Mr. Cooper's catalogue of comets extends to IV, 1851, which passed its perihelion Sept. 30·8, mean Greenwich time. The dates in the volume are *all* reduced to Greenwich time.

As to the authorities adopted for the construction of this catalogue, Mr. Cooper says:—"In the selection of orbits of any comet, where a great number have been computed, I had the advantage of Mr. Graham's assistance. Our adopted rules were to prefer those calculated upon the largest arc, having regard to the soundness of the data, and the reputation of the computer; to reject parabolic and hyberbolic elements, where no doubt or but little existed as to the ellipticity of the orbit, and to preserve those elements of any one comet that agreed best with one another." Following up a remark made by Sir J. Herschel, *Outlines of Astronomy*, p. 377, that "a plane of motion nearly coincident with the ecliptic and a periodical return are circumstances eminently favourable to direct revolution in the cometary, as they are decisive among the planetary orbits" (an idea which had, indeed, occurred some years ago to Mr. Cooper himself), Mr. Cooper "thought it desirable to investigate whether or not any other apparent analogy might be deducible from the heliocentric longitudes of perihelions and ascending nodes." To ascertain this, the comets having ecliptic orbits were arranged in tables as follows:—

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* Vol. xii. p. 34.

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Table I.—Ecliptic orbits in the order of their inclinations.

Table II.—Comets whose revolutions are under 500 years, arranged in quadrants of the longitude of perihelion, commencing with from longitude 45° to 135°, and in the order of their inclination in each quadrant.

Table III.—Planets arranged in quadrants, as in Table II.

From a consideration of these tables, Mr. Cooper is induced to believe that to Sir J. Herschel's hypothesis "that direct motion or a small inclination are favourable indications of a periodic comet," we may add "a longitude of the perihelion and of the ascending node between 45° and 135°."

The notes appended by Mr. Cooper are very full and very instructive, and intelligible: they form, indeed, an essential feature in the volume.

Astronomische Beobachtungen auf der Sternwarte zu Bonn, *aufgestelt und herausgegeben von* Dr. F. W. A. Argelander. *Zweiter Band,** 1te *Abtheilung.* 4to. pp. 224. Bonn, 1852.

This work is a continuation of the zone observations of Professor Argelander, from Zone 205 to 321, and contains stars between 15° and 31° of south declination. It may thus be considered as a prolongation of Bessel's Zones to the south, as the previous volume was an extension to the north. There are auxiliary tables, after Bessel's method, for the reduction of these observed places to the mean places for 1850, Jan. 0; but as the stars in these zones are observed so near the horizon, Professor Argelander has added a peculiar set of auxiliary tables as an appendix to the zones, by which the labour of reduction is considerably reduced.† Professor Argelander proposes to bring out these Southern Zones in three parts (*Monthly Notices*, vol. xii. p. 25), and hopes that they will give additional accuracy to past and future planetary and cometary observations made out of the meridian.

Professor Argelander remarks that the declinations of the southern stars in the B. A. Catalogue appear to be a mean of Taylor and Brisbane, and that Brisbane's catalogue sets the stars considerably too much to the south. It is much to be regretted that Mr. Taylor's second catalogue (*Madras Observations*, vol. vi., Madras, 1844), appeared *after* the completion of the B. A. Catalogue. Mr. Baily had only Taylor's *partial* catalogues to refer to, which are affected by a systematic error in the division of the

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* The first volume, Bonn, 1846, contains the zones up to 205, which include the stars between 45° and 80° of north declination. Bessel's zones from 15° south declination to 45° north declination are to be found in the volumes of the Königsberg Observations. Of the latter, the stars between 15° north and 15° south declination have been reduced and catalogued. *Catalogus Stellarum ex Zonis Regiomontanis, auctore* M. Weisse, 4to. pp. 284. Petropoli, 1846.

† *Hülfstafeln zu den Bonner südlichen Zonen,* 12mo. pp. 99. Bonn, 1852.